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NASA BALLOON MAKES RECORD-BREAKING FLIGHT

Larger than a football field and flying near the edge of space, a NASA scientific balloon has set a new flight record of almost 32 days after completing two orbits around the South Pole.

The record-breaking balloon carried the Trans-Iron Galactic Element Recorder (Tiger) experiment, designed to search for the origin of cosmic rays, atomic particles that travel through the galaxy at near light speeds and shower the Earth constantly.

The pilot-less, helium-filled scientific balloon was launched from McMurdo Station, Antarctica at 6:30 a.m. EST on Dec. 20, 2001. The balloon traveled approximately 8,800 miles (about 1,400 kilometers) before landing 31 days, 20 hours later at 3:03 a.m. EST, January 21, 284 miles (458 kilometers) from McMurdo Station. Payload recovery operations are in progress.

The previous endurance record for a long duration balloon flight was in January 2001 from McMurdo. The flight was one orbit of the South Pole that lasted 26 days. The Tiger mission was able to more than double the amount of continuous science observational time over any previous balloon mission.

"We are excited with the duration of this flight which allowed the scientists to get ample science to perform their studies," said Steve Smith, Chief of the Balloon Program Office at NASA Goddard Space Flight Center's Wallops Flight Facility, Wallops Island, Va. "We routinely have long duration balloons that float for up to two weeks, but to have one flight last for over 31 days is very rewarding."

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Scientific balloons are made of thin polyethylene material, about the same thickness as ordinary sandwich wrap. An enormous balloon was needed to hoist the two-ton Tiger experiment to about 125,000 feet (38,100 meters). The Tiger balloon is taller than the Washington Monument, which stands just over 555 feet high. As the balloon rises, the gas it contains expands. The balloon used for this Antarctica flight expanded to a diameter of more than 424 feet (129 meters) and weighed 3,687 pounds (1,674 kilograms).

To complete the flight, the experiment and its parachute float to the ground after being separated from the balloon by radio command. Helium was released from the balloon for descent near McMurdo Station.

“The importance of Tiger is that it is the first experiment that has both a sufficient collecting power and adequate resolution to measure abundances of all nuclei from iron through Zirconium,” said Tiger Principal Investigator Robert Binns, Washington University, St. Louis. “This will enable us to determine whether the cosmic ray source is hot or cold, gas or solid. We have already seen in our quick-look analysis of flight data that Tiger’s resolution is sufficient to resolve those nuclei.”

Personnel from the National Scientific Balloon Facility, Palestine, Texas, who support approximately 25 NASA balloon flights annually from sites worldwide, conducted the launch, flight, and recovery operations of the Tiger balloon mission. “ We are really proud of our crew in Antarctica,” said Danny Ball, Site Manager of the Texas facility. “Everyone at NSBF has contributed to this success, but our crew that spent Thanksgiving, Christmas, and New Years on the “Ice” deserves the lion’s share of the credit."

Antarctica ground and air operations support was provided by the National Science Foundation’s Office of Polar Programs.

Tiger is a collaboration among Washington University; NASA’s Goddard Space Flight Center, Greenbelt, Md.; California Institute of Technology, Pasadena; and the University of Minnesota, Minneapolis. The Wallops Flight Facility manages NASA’s Scientific Balloon Program for the Office of Space Science, NASA Headquarters.

Information on NASA’s Scientific Balloon Program is available on the Internet at:
http://www.wff.nasa.gov/pages/scientificballoons.html
http://master.nsbf.nasa.gov/fred/index.html

A plot of the balloon’s flight path can be viewed on the Internet at:
http://192.149.107.13/ice0102.htm

For pictures and information on the Tiger mission visit:
http://cosray2.wustl.edu/tiger/index.html

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